Air Force Research Laboratory|AFRL

Science and Technology for Tomorrow's Air and Space Force

Success Story

COMPOSITES AFFORDABILITY INITIATIVE TEST DATABASE OPENS INFORMATION FLOOD GATES

The Composites Affordability Initiative (CAI) test database will provide company designers, engineers, and weapon system program offices with the data they require to consider introducing advanced technologies into future and current weapon systems. The directorate expects the database to minimize the financial burden of testing required to implement a new technology as well as reduce the risk and accelerate the transition.

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Accomplishment

The CAI Team, consisting of AFRL's Materials and Manufacturing Directorate and Air Vehicles Directorate, the Office of Naval Research, Boeing, Lockheed Martin, and Northrop Grumman, developed a relational database to archive all test data and make the data accessible to all team members for current and future use.

Background

The vast majority of composites development and demonstration efforts develops data to support technology transition. This data is critical to support the transition, and the contractor often only shares the data with the weapon system program office.

More successful programs organize their data to support additional transition opportunities. In consideration of the large CAI Team, it was imperative to generate data that is trusted by all the organizations and data that is available to aid in current and future technology transition opportunities to reduce the duplication of testing.

To accomplish this task, team participants first came to an agreement on test standards to follow. For the first time, the entire industrial base of aerospace prime contractors, as well as the Air Force and the Navy, agreed to a single set of testing standards to validate the performance of composite structures created with new materials and processes.

The CAI test database contains mechanical property test data that is traceable back to the process that produced it, including processing parameters used as well as the material and its integrity. This interrelationship between materials, processes, and performance produces a legacy of data that elevates the integrity of the data and facilitates the transition of materials and processes.

The first 18 months of CAI generated data for more than 7,000 tests. Data from full-scale development projects resulted in transition to real systems, such as the F-35, while participants continue adding technology maturation efforts to the database. These data offer the potential to minimize testing, thus supporting additional technology transition opportunities.

Materials and Manufacturing
Emerging Technologies

Additional information

To receive more information about this or other activities in the Air Force Research Laboratory, contact TECH CONNECT, AFRL/XPTC, (800) 203-6451 and you will be directed to the appropriate laboratory expert. (03-ML-09)